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Michael E. Carmen, Esq.
M. CARMEN & ASSOCIATES, PLLC
Suite 400
170 Old Country Road
Mineola, NY 11501

EXAMINER	
LUNDGREN, JEFFREY S	

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/779,419
Filing Date: February 13, 2004
Appellant(s): WOLLENBERG, ROBERT H.

Michael E. Carmen
For Appellant

EXAMINER'S ANSWER

This is in response to the Appeal Brief filed October 15, 2008, appealing from the Office Action mailed February 11, 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the Brief.

(2) Related Appeals and Interferences

The Examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of the claims contained in the Brief is correct.

(4) Status of Amendments After Final

The Appellant's statement of the status of amendments after final rejection contained in the Brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the Brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The Appellant's statement of the grounds of rejection to be reviewed on appeal is correct, except for the fact that it is actually claims 1-11 that are rejected as being anticipated by Cherpeck, U.S. Patent No. 5,306,315, issued on April 26, 1994. Appellant has mistakenly stated that only claims 1-6 and 8-11 were rejected. This rejection was made in the Final Action mailed on February 11, 2008.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the Brief is correct.

(8) Evidence Relied Upon

Heneghan et al., "Studies of Jet Fuel Thermal Stability in a Flowing System," *Journal of Engineering for Gas Turbines and Power-Transactions of the ASME, 115(3):*480-485 (July 1993);

U.S. 5,399,178	CHERPECK	03-1995
U.S. 5,306,315	CHERPECK	04-1994
U.S. 2002/0090320 A1	BUROW et al.	07-2002
U.S. 6,713,264	LUTTERMANN et al.	03-2004

(9) Grounds of Rejection

The following grounds of rejection are applicable to the appealed claims:

9.1 *Claim 16 is rejected as being indefinite*:

Claim 16 stands rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As set forth in the Final Rejection, claim 16 has no positive, active steps (i.e., "using the results of step (b) as a basis for obtaining a result of further calculations), and the term "basis" is confusing because it is not clear if this term is intended to provide any method steps.

9.2 *Claims 1, 2 and 8 are anticipated by Heneghan*:

The rejection of claims 1, 2 and 8, under 35 U.S.C. § 102(b) as being anticipated by Heneghan *et al.*, JOURNAL OF ENGINEERING FOR GAS TURBINES AND POWER-TRANSACTIONS OF THE ASME, (JUL 1993) Vol. 115, No. 3, pp. 480-485), is maintained.

As stated in the Final Action, Heneghan teaches a method for measuring the performance of fuel additives in a plurality of fuel samples, wherein a measured performance criteria is measuring deposit formation from the fuel sample (see item 4 on page 481; item 7 on page 482; and Figure 1and description thereof).

As in claim 2, Heneghan teaches that one of the fuel additives is an anti-icing additive (page 484, col. 1, first full paragraph). As in claim 8, Heneghan teaches that the heating is carried out in the presence of air (page 481, first partial paragraph; *i.e.*, nitrogen/oxygen mixture).

9.3 *Claims 1-6 and 8-11 are anticipated by Cherpeck '178*:

The rejection of claims 1-6 and 8-11, rejected under 35 U.S.C. 102(b) as being anticipated by Cherpeck, U.S. Patent No. 5,399,178, issued on March 21, 1995, is maintained.

As stated in the Final Action, Cherpeck teaches a series of chemical compound analogs that serve as fuel additives. Cherpech teaches testing of multiple fuels samples by measuring their deposit formation (see Example 3). As in claims 2 and 3, the additives of Cherpeck are

detergents, such as Mannich reaction products, and also meet the limitations of claim 4. As in claim 5, Cherpeck teaches heating the sample to a predetermined temperature for a predetermined period of time, and measuring the weight loss to determine deposit formation mass. As in claim 6, Cherpeck teaches that the temperature is *about* 100 °C (*i.e.*, 200 °F). As in claim 8, Cherpeck teaches heating the sample in the presence of air (see Example 3). As in claims 9 and 10, Cherpeck measures the deposits after two temperatures, wherein the second temperature is higher than the first (see Example 1). As in claim 11, Cherpeck teaches the inert solvent octane.

9.4 *Claims 1-11 are anticipated by Cherpeck '315*:

The rejection of claims 1-11, under 35 U.S.C. 102(b) as being anticipated by Cherpeck, U.S. Patent No. 5,306,315, issued on April 26, 1994, is maintained.

As set forth in the Final Action, claim 1 is directed to a method for screening fuel additives in fuel compositions by measuring deposit formation, and outputting the results, including detergents, and is met by the analysis of multiple fuel additive samples, as in claims 2 and 3. Claims 5-7 is directed to measuring mass differences by TGA with certain intervals for temperature and time; claim 8 includes air as a component; claims 9 and 10 are directed to measuring mass difference at two different temperatures, where the second temperature is higher than the first.

Cherpeck teaches measuring fuel deposits by TGA in the presence of air, and teaches raising the termperatures and measuring the deposits at different temperatures (see Example 14), and accordingly meets the limitations of claims 1 and 5-10. The compounds class of claim 4 (polyalkylphenoxyalkanols), is met by the compounds in Example 2. As in claim 2, 3 and 11, Cherpeck teaches an inert organic solvent (fourth paragraph, Summary of the Invention).

9.5 *Claims 1-6, 8-13, 15 and 17, are obvious over Cherpeck '178 and Burow*:

The rejection of claims 1-6, 8-13, 15 and 17, under 35 U.S.C. § 103(a) as being unpatentable over Cherpeck, U.S. Patent No. 5,399,178, issued on March 21, 1995, in view of Burow *et al.*, U.S. Patent Application Publication No. 2002/0090320 A1, published on July 11, 2002, is maintained.

As stated in the Final Action, those of ordinary skill in the art of analytical chemistry, are typically well-versed in routine automation procedures and general computer implementation, as set forth in claims 12, 13, 15 and 17, as demonstrated by Burow. It is a stretch to suggest that the use of machines and computers belongs exclusively to those who perform analysis of the type of samples taught by Burow, or that such automation has not broken through to the claimed art and been well-recognized by those who develop and screen new fuel additive samples as taught by Cherpeck.

Cherpeck teaches a series of chemical compound analogs that serve as fuel additives. Cherpech teaches testing of multiple fuels samples by measuring their deposit formation (see Example 3). As in claims 2 and 3, the additives of Cherpeck are detergents, such as Mannich reaction products, and also meet the limitations of claim 4. As in claim 5, Cherpeck teaches heating the sample to a predetermined temperature for a predetermined period of time, and measuring the weight loss to determine deposit formation mass. As in claim 6, Cherpeck teaches that the temperature is *about* 100 °C (*i.e.*, 200 °F). As in claim 7, Cherpeck teaches thermal gravimetric analysis. As in claim 8, Cherpeck teaches heating the sample in the presence of air (see Example 3). As in claims 9 and 10, Cherpeck measures the deposits after two temperatures, wherein the second temperature is higher than the first (see Example 1). As in claim 11, Cherpeck teaches the inert solvent octane.

Cherpeck does not explicitly teach the robot assembly for positioning samples as in claim 12; the computer that controls the robot assembly as in claim 13; the storing of the data on a data carrier as in claim 15; and transmitting results to a data carrier at a remote location as in claim 17.

Burow is directed to a system and method for high throughput processing using sample holders. As in claim 12, the system has a plurality of work perimeters, with a rotational robot preferably associated with each work perimeter, wherein the system and method are flexible, efficient, and robust high throughput processing, such as screening of chemical and/or biochemical libraries (see *Summary of the Invention*). As in claim 13, Burow teaches the linking of the system components with the robot for full automation, and control by a computer (paragraphs 0073 and 0074). As in claim 15, Burow teaches recording the data on a data carrier

(paragraph 0093); and as in claim 17, the data carrier is in a remote location from the robot assembly (paragraph 0136).

One of ordinary skill in the art would have had a reasonable expectation of success in arriving at the invention as claimed because each of Cherpeck and Burow are directed to using analytical laboratory instrumentation for chemical analysis. One of ordinary skill in the art would have recognized the advantages of using generic and routine robotic based systems, computers, and remote operations as taught by Burow for the types of chemical analysis of Cherpeck because of the increase throughput provided by these assemblies when dealing with voluminous sample sizes. Accordingly, the invention as a whole is *prima facie* obvious over the art of record.

9.6 *Claims 1-11, 62 and 63, are obvious over Cherpeck '315*:

The rejection of claims 1-11 and 62 and 63, under 35 U.S.C. 103(a) as being unpatentable by Cherpeck 2, U.S. Patent No. 5,306,315, issued on April 26, 1994, is maintained.

As stated in the Final Action, claim 1 is directed to a method for screening fuel additives in fuel compositions by measuring deposit formation, and outputting the results, including detergents, and is met by the analysis of multiple fuel additive samples, as in claims 2 and 3. Claims 5-7 is directed to measuring mass differences by TGA with certain intervals for temperature and time; claim 8 includes air as a component; claims 9 and 10 are directed to measuring mass difference at two different temperatures, where the second temperature is higher than the first.

Cherpeck teaches measuring fuel deposits by TGA in the presence of air, and teaches raising the termperatures and measuring the deposits at different temperatures (see Example 14), and accordingly meets the limitations of claims 1 and 5-10. The compounds class of claim 4 (polyalkylphenoxyalkanols), is met by the compounds in Example 2. As in claim 2, 3 and 11, Cherpeck 2 teaches an inert organic solvent (fourth paragraph, Summary of the Invention).

Although Cherpeck does not explicitly recite "about 50 ml" and "about 20 ml," as in claim 62 and 63, Cherpeck teaches a mass of the fuel additive samples of approximately 25 mg, thereby reading on the limitations of "about 50 ml" and "about 20 ml".

One of ordinary skill in that art would have had a reasonable expectation of success in arriving at the invention as claimed because Cherpeck teaches the analysis of fuel samples using TGA with an approximate sample size reasonably close to the claimed sample size, especially given the claimed language of "about" in claims 62 and 63 (see MPEP § 2144.05). Therefore, the invention as a whole was *prima facie* obvious at the time it was made.

9.7 *Claims 1-6, 8-15 and 17, are obvious over Cherpeck '178, Burow and Lutterman*:

The rejection of claims 1-6, 8-13, 15 and 17, under 35 U.S.C. § 103(a) as being unpatentable over Cherpeck, U.S. Patent No. 5,399,178, issued on March 21, 1995, in view of Burow *et al.*, U.S. Patent Application Publication No. 2002/0090320 A1, published on July 11, 2002, and Luttermann *et al.*, U.S. Patent No. 6,713,264, issued on March 30, 2004.

As stated in the Final Action, Cherpeck teaches a series of chemical compound analogs that serve as fuel additives. Cherpech teaches testing of multiple fuels samples by measuring their deposit formation (see Example 3). As in claims 2 and 3, the additives of Cherpeck are detergents, such as Mannich reaction products, and also meet the limitations of claim 4. As in claim 5, Cherpeck teaches heating the sample to a predetermined temperature for a predetermined period of time, and measuring the weight loss to determine deposit formation mass. As in claim 6, Cherpeck teaches that the temperature is *about* 100 °C (*i.e.*, 200 °F). As in claim 7, Cherpeck teaches thermal gravimetric analysis. As in claim 8, Cherpeck teaches heating the sample in the presence of air (see Example 3). As in claims 9 and 10, Cherpeck measures the deposits after two temperatures, wherein the second temperature is higher than the first (see Example 1). As in claim 11, Cherpeck teaches the inert solvent octane.

Cherpeck does not explicitly teach the robot assembly for positioning samples as in claim 12; the computer that controls the robot assembly as in claim 13; the storing of the data on a data carrier as in claim 15; and transmitting results to a data carrier at a remote location as in claim 17. Cherpeck also does not explicitly teach using a computer for selecting positive/rejecting negative samples for further assays.

Burow is directed to a system and method for high throughput processing using sample holders. As in claim 12, the system has a plurality of work perimeters, with a rotational robot preferably associated with each work perimeter, wherein the system and method are flexible,

efficient, and robust high throughput processing, such as screening of chemical and/or biochemical libraries (see *Summary of the Invention*). As in claim 13, Burow teaches the linking of the system components with the robot for full automation, and control by a computer (paragraphs 0073 and 0074). As in claim 15, Burow teaches recording the data on a data carrier (paragraph 0093); and as in claim 17, the data carrier is in a remote location from the robot assembly (paragraph 0136).

Lutternmann teaches a process for screening of molecules from molecule libraries with regard to their individual properties (see Abstract). Luttermann performs an assay on the library, and the set of compounds meeting a certain threshold/cutoff value, are passed for further testing, while compounds not meeting this value are not further tested, and are all computer controlled (see Detailed Description of Invention – cols. 4-9).

One of ordinary skill in the art would have had a reasonable expectation of success in arriving at the invention as claimed because each of Cherpeck, Burow and Lutterman, are directed to using analytical laboratory instrumentation for chemical analysis. One of ordinary skill in the art would have recognized the advantages of using generic and routine robotic based systems, computers, and remote operations as taught by Burow for the types of chemical analysis of Cherpeck because of the increase throughput provided by these assemblies when dealing with voluminous sample sizes. Furthermore, one of ordinary skill in the art would have recognized that combinatorial approaches using decision making processes for selection of positive samples for further testing as taught by Lutterman is well-suited for large sample sets. Accordingly, the invention as a whole is *prima facie* obvious over the art of record.

(10) Response to Argument

The following are the Examiner's responses to Appellant's arguments.

10.1 *Claim 16 is rejected as being indefinite*:

Appellant contends that one of ordinary skill in the art would understand the disputed claim limitation because Appellant provides certain examples in the specification that relate to

the further decision making process on the *basis* of the output, such as cost (Brief, page 5, which refers to page 6, lines 9 and 10 of the Specification).

Appellant's arguments have been considered, but are not found persuasive.

Appellant is correct that the specification does disclose, albeit in a very generic description, that "deposit formation data results" can be further "used," such as the section cited by Appellant:

> "This information may also allow for calculating necessary changes of the additives and fuels at the least cost."

Specification, page 6, lines 9 and 10.

However, this alleged support is insufficient. Neither this passage nor any other in Appellant's disclosure teaches how the claimed "deposit formation data results" serve as a "*basis* for obtaining a result of further calculations." Appellant appears to overlook the fact that there is a requirement to *clearly and definitively* connect the limitation of the "deposit formation data results" of claim 1 with the "further calculations" of claim 16. The blank use of the term "*basis*" does not set forth any clearly defined metes and bounds. For example, in reference to the above-captioned portion from the specification and its adjacent disclosure within the same paragraph, one still cannot reasonably determine what deposit formation data results are utilized, the manner in which the data serves for further calculation, nor what calculations are carried out (note: the term "basis" does not even appear in this passage). Appellant suggests the feature "cost" but does not show how this feature is derived from the "basis" of "deposit formation data results." Therefore, the claim limitation of "using the results of step (b) [*i.e.*, deposit formation data results] as a basis for obtaining a result of further calculations" is indefinite.

10.2 *Claims 1, 2 and 8 are anticipated by Heneghan*:

Appellant alleges that the disclosure of Heneghan does not teach a "high throughput method for screening fuel additive composition samples, under program control," but only teaches a method for analyzing fuel additive compositions. Appellant does not provide any argument stating the minimum requirement for a method to be considered as "high throughput," but merely insinuates that one of ordinary skill in the art would not consider Heneghan to be

"high throughput" based on certain captioned sections of the specification reproduced on pages 8 through 10 of the Brief.

Appellant also mistakenly suggests that Heneghan cannot be considered "high throughput" because part of the method taught by Heneghan teaches that a section of instrumental rig is removed, drained, and cut for analysis (Brief, page 11, lines 18-23).

The Examiner disagrees with Appellant's interpretation of the claim language and how it relates to the cited art.

Contrary to what Appellant might suggest at pages 8-10 of the Brief, the captioned portions of specification should not be read into claim 1, as the claim does not require any particular embodiment or further limitation to the phrase "high throughput". For example, one should not read the limitation "a plurality of respective test receptacles" into claim 1 even though the specification (page 5, line 16) suggests that this is a mechanical component that could accompany a high throughput method.

The specification provides the following on the phrase "high throughput":

> "The expression "high throughput" as used herein shall be understood to mean that a ***relatively large number*** of different fuel additive compositions or fuel compositions can be ***rapidly*** prepared and analyzed."

Specification, page 5, lines 12-15 (emphasis added).

This definition is broad and uses relative terminology, such as, the phrases "relatively large number" and "rapidly." Considering that the goal of Heneghan is to better understand the effects of fuel additives to jet fuel compositions, one of ordinary skill in the art would consider Heneghan's method (*i.e.*, as explained by Figure 1 and the disclosure in the section titled, *Experimental Work*) to be high throughput *relative* to performing deposit formation test using actual jet engines and accompanying components for fuel delivery. The system designed by Heneghan is much more simple and convenient for making the measurements than a jet engine, and additionally uses numerous components in combination that could be considered to assist in processing "relatively large numbers" of samples in a "rapid" manner, such as the Sensotech Type TJE pressure transducer that provides the signal to the Micristar controller, the data recording system of the Fluke model 2400B computer with a Model 1722A controler using a Fisher Model 546 I/P converter, the Hewlett Packard 5890 Series II gas chromatograph, and the

Leco RC-412 multiphase carbon analyzer (see Heneghan, page 481, col. 2). Furthermore, numerous of these commercial components that are integrated into the fuel analysis system cited by Heneghan in the sectioned titled, *Experimental Work*, on page 481 are "under program control" as required by claim 1.

10.3 *Claims 1-6 and 8-11 are anticipated by Cherpeck '178*:

Appellant alleges that Cherpeck does not teach all of the claimed limitations, namely, the limitation of a "high throughput method for screening fuel additive composition samples, under program control," but only teaches a method for analyzing fuel additive compositions.

Again, Appellant makes certain assumptions and arguments regarding the claimed method that do not involve the actual claim limitations. For example, Appellant states:

> "Accordingly, Cherpeck '178 is no more an anticipatory reference than Heneghan et al. In contrast to the presently claimed invention, Cherpeck '178 discloses that certain Mannich condensation products provide excellent control of engine deposit, including intake valve deposits, with fewer combustion chamber deposits when employed as fuel additives. Cherpeck '178 further discloses in Example 3, which is relied upon by the Examiner, that the deposit reducing capacity of a Mannich condensation product blended in gasoline were determined in an ASTM/CFR single-cylinder engine test by running the engine for 15 hours, removing the intake valve, washing the intake valve with hexane and weighing it. Thus, Cherpeck '178 merely discloses individually testing fuel compositions for deposit formation via ***a*** non-automated process. At no point, however, is there any disclosure in Cherpeck '178 of a high throughput method for screening a plurality of fuel additive samples for deposit formation."

Brief, page 13, lines 18-23.

Appellants arguments are misplaced for at least the reason that the method demonstrated in Example 3 allows for a more rapid analysis of samples than that of an automobile. As noted in the arguments above for section 10.2 regarding the rejection over Heneghan, the term "high throughput" is relative, such as relative to testing an actual automobile engine. Regarding program control, the Waukesha CFR single cylinder engine is a program control machine. Accordingly, the limitations of the instantly claimed invention are met.

10.4 *Claims 1-11 are anticipated by Cherpeck '315*:

Appellant alleges that Cherpeck does not teach all of the claimed limitations, namely, the limitation of "high throughput method for screening fuel additive composition samples, under program control," but only teaches a method for analyzing fuel additive compositions.

Appellant is again mistaken in the construction of claim 1, specifically, as it applies to the "high throughput" and "under program control" limitations.

Cherpeck does teach a "high throughput method for screening fuel additive composition samples, under program control." For example, see Example 14 in col. 21. The system in Cherpeck is a TGA system that is operated by microcomputer. Again, the system processes and analyzes fuels more rapidly than that of an engine, or those done by manual TGA, thereby making Cherpeck's method "highthroughput" as required by the claim. There is nothing in claim 1 that requires complete automation with fully integrated robotics and computer command control as Appellant would appear to suggest.

10.5 *<u>Claims 1-6, 8-13, 15 and 17, are obvious over Cherpeck '178 and Burow</u>*:

Appellant traverses the rejection and makes the allegation that Burow is no more relevant to claim 1 than Cherpeck because Burow does not relate to fuels:

> "In fact, nothing in Burow et al. even remotely discloses a high throughput method for screening fuel additive composition samples for deposit formation, under program control, comprising the steps of (a) providing a plurality of different fuel additive composition samples, each sample comprising at least one fuel additive; (b) measuring the deposit formation of each sample to provide deposit formation data results for each sample; and, (c) outputting the results of step (b) as presently recited in appealed Claim 1."

Brief, page 16, section E, first paragraph.

In response to Appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Claim 12 recites the following:

> "The method of claim 1, wherein a robotic assembly selectively retrieves the samples from an array of samples and individually positions the samples in a testing station for determination of the deposit formation."

Therefore, claim 12 requires much less than suggested by Appellant on pages 17 and 18 of the Brief with regard to merging the engine of Cherpeck with a robot that positions samples from an array into a "testing station" as taught by Burow. Although Appellant goes to great effort to import certain effects into claim 12, there is actually nothing particular about the "testing station" that is beyond the teachings of the references that would not be recognized as obvious by one of ordinary skill in the art. The so-called "testing station" is a very broad term, and reads on a "holding station" or a generic component for samples prior to or during testing. For example, regarding the claimed testing station, see the testing station **220** in Fig. 2, and description thereof from the specification:

> "A robotic assembly 250 includes a movable arm 251 with a grasping mechanism 252. The robotic assembly is adapted to grasp an individual test receptacle 212 in accordance with selection instructions from computer controller 230 and move the test receptacle to a position in testing station 220 so that the sample in the receptacle can be measured for deposit formation data. The computer controller 230 is operatively associated with controls to the robotic assembly via control signal transmission line 231 to selectively retrieve predetermined test receptacles for measurement and then replace them in their assigned respective positions in the holder 215.
>
> ***Testing station 220 includes means for testing the samples for deposit formation***. Deposit formation data results of the test are converted to an electrical or optical signal and transmitted via signal transmission line 223 to computer controller 230. ***Various means for deposit formation testing are known and generally include subjecting the sample to a deposit formation environment and measuring the deposit formation of the sample over a predetermined period of time***."

Specification, page 19, lines 7-20.

Accordingly, the merging of general robotics for making measurements from multiple samples of Cherpeck is within the routine knowledge of one of ordinary skill in the art, and would be recognized as obvious for the benefits of increasing the speed at which current samples

in Cherpeck can be performed. Absent a showing of unexpected results, or a *particular* mechanical/electrical/chemical embodiment, the claims are obvious.

10.6 *Claims 1-11, 62 and 63, are obvious over Cherpeck '315*:

The arguments Appellant relies upon in refuting the instant rejection are the same as the arguments to the rejection of the claims under 35 U.S.C. § 102(b) as being anticipated by Cherpeck '315.

The Examiner disagrees with Appellant for the reasons provided in the Examiner's response detailed above in section 10.4. Accordingly, the rejection is maintained.

10.7 *Claims 1-6, 8-15 and 17, are obvious over Cherpeck '178, Burow and Lutterman*:

The arguments Appellant relies upon in refuting the instant rejection are the same as the arguments to the rejection of the claims under 35 U.S.C. § 103(a) as being obvious in view of Cherpeck '178 and Burow.

The Examiner disagrees with Appellant for the reasons provided in the Examiner's response detailed above in section 10.5. Accordingly, the rejection is maintained.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Respectfully submitted,
Patent Examiner: Jeffrey S. Lundgren, Art Unit 1639

Conferees
/ Christopher S. F. Low /
Supervisory Patent Examiner, Art Unit 1639

/JD Schultz/

Supervisory Patent Examiner, Art Unit 1635